

FOCUS

Reporting on innovative products and strategies for building better, safer roads • July/August 2000

DC Streets: An Innovative Partnership for Better Roads

Asset management is coming to city streets, thanks to a new partnership among the District of Columbia Department of Public Works (DCDPW), the Federal Highway Administration (FHWA), and the highway industry. In an initiative known as "DC Streets," DCDPW and FHWA are contracting with VMS, Inc., to preserve and maintain approximately 75 miles of the major streets and highways in the District. These roads make up the District's portion of the National Highway System and are heavily used by residents, commuters, and tourists.

The innovative contract calls for performance-based work, in which a desired outcome is specified rather than a material or method. This differs from traditional maintenance contracts, which typically mandate what materials and techniques are to be used. "Instead of the District looking to see how many people we have on the job or how many tons of asphalt we use, they'll look at the results of what we do, such as the rideability of the pavement. They'll see if we meet the standards," says Preston Kelley of VMS.

The new contract reflects the increasingly popular concept known as asset management, which emphasizes the preservation, upgrading, and timely replacement of highway assets through cost-effective planning and resource allocation decisions.

The project will cover not only pavement maintenance, but also upkeep of such assets as tunnels, bridges, roadside

features (including curbs, gutters, sidewalks, and retaining walls), and pedestrian bridges. Starting in the winter of 2001/2002, snow and ice control will also be part of the contract.

"Under this new partnership, major roads and neighborhood streets will be better maintained, which will benefit residents as well as visitors," said FHWA Administrator Ken-

neth Wykle at the June 19 ceremonial signing of the contract. "We're using an innovative method of contracting that will save time and money and is based on outcome, not bureaucratic process."

In addition to saving time and money, the new contract brings the added benefit of freeing up DCDPW employees to spend more time improving and maintaining the more than 1,400 miles of additional roads and neighborhood streets in the District. "This will be a real plus for the city," says Luke DiPompo, project manager for the new contract at DCDPW. "Because we have a shortage of personnel, being able to redeploy our staff to other streets will be a main benefit."

VMS has worked on performance-based contracts in States such as Virginia, Texas, and Oklahoma, with its 1996 contract with the Virginia Department of Transportation being the first time a private firm assumed full responsibility for comprehensive maintenance of significant portions of a State's Interstate highway system. The DC project, however, "is the first time a city has done this on such a large scale," says Kelley.

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U.S. Department
of Transportation

**Federal Highway
Administration**

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FHWA Develops Tools for More Strategic Work Zone Planning

With the national highway system complete and more rehabilitation work being done to maintain existing roads, increased attention is being paid to work zones. Often, the user delays caused by work zones and the resulting costs to motorists, as well as the costs of mitigation strategies to lessen these delays, are not considered during the design and planning of projects. A new initiative of the Federal Highway Administration (FHWA), known as the Strategic Work Zone Analysis Tools (SWAT) program, is out to change this.

Four tools are being developed as part of the initiative: an Expert System software program, a traffic impact analysis spreadsheet, a cost/alternative analysis spreadsheet, and a detailed simulation model. "These tools will greatly expand the analysis capabilities of highway agencies," says John Harding of FHWA. "Other tools that are out there don't encompass the impacts to areas surrounding work zones."

With the Expert System, a user would enter data on the characteristics of the work zone, such as what type of highway improvement or repair work is being done and the duration of the work. The program would then provide a list of possible mitigation strategies for reducing work zone delays and costs, such as retiming an alternative route's traffic signals.

The traffic impact analysis spreadsheet, known as QuickZone, would take the analysis a step further by comparing the traffic impacts for work zone mitigation strategies and estimating the costs associated with these impacts. For example, if a highway agency was widening a lane of traffic, QuickZone could estimate the costs of doing work

at night instead of during the day or diverting the traffic to one road versus another road during different phases of the construction. The costs can be estimated for both an average day of work and for the whole life cycle of construction.

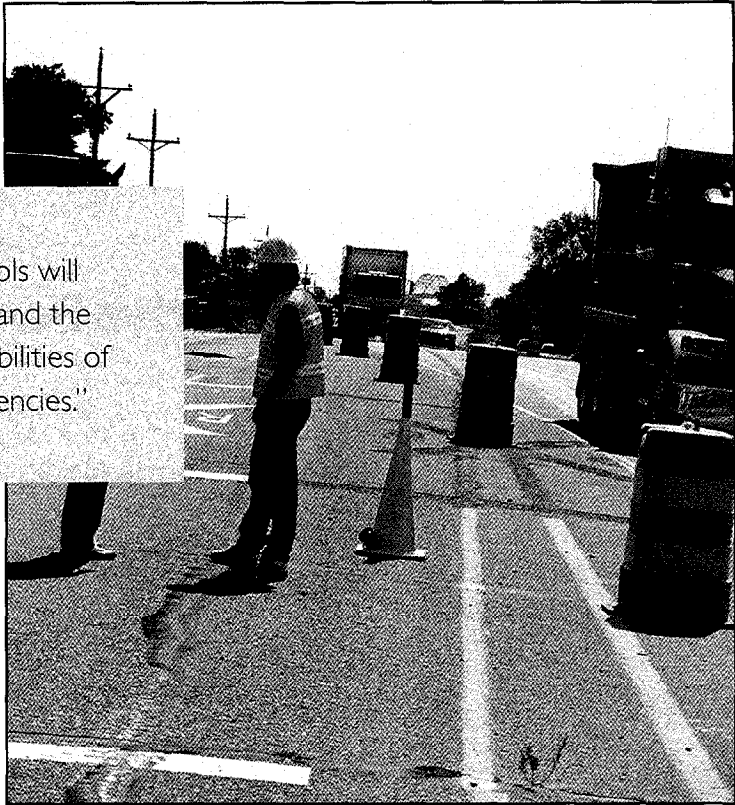
The cost/alternative analysis spreadsheet will provide more detailed cost analysis, while the simulation model will be used in conjunction with QuickZone to more precisely estimate the impacts of specific work zone strategies and the effectiveness of mitigation techniques.

Version 1.0 of QuickZone is scheduled to be released in March of next year. In the meantime, a prototype ver-

sion will be available for trial use and evaluation. A user need only have Microsoft Excel 97 or higher running on a Windows-based PC to use the QuickZone application. The evaluators will include a steering committee composed of States and Metropolitan Planning Organizations, among others.

A definite date has not yet been set for the release of the Expert System software, cost/alternative analysis spreadsheet, and simulation model. The SWAT program is expected to run through 2004.

For more information, or if you are interested in using and evaluating QuickZone, contact Raj Ghaman at FHWA, 202-493-3270 (fax: 202-493-3219; email: raj.ghaman@fhwa.dot.gov). ▼



"These tools will greatly expand the analysis capabilities of highway agencies."

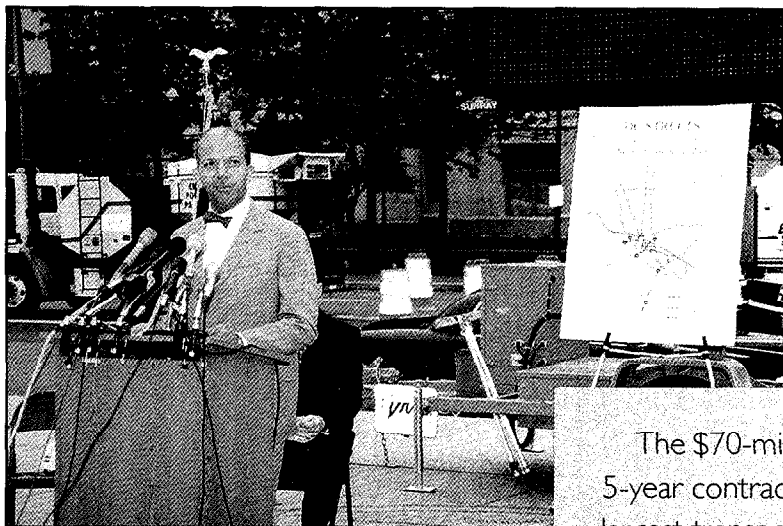
The strategic work zone analysis tools will help reduce work zone delays and costs.

DC STREETS, continued from page 1

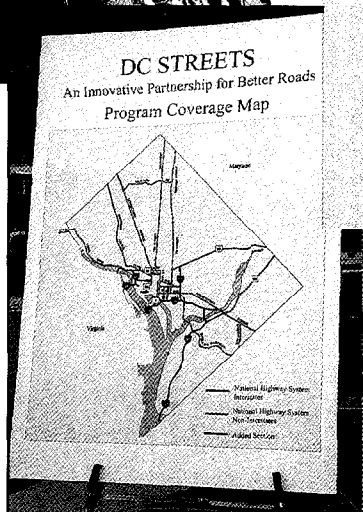
The \$70-million, 5-year contract is the largest transportation investment in DCDPW's history. It also represents the first time that FHWA has teamed directly with a city government on a program to preserve its highway infrastructure. FHWA's role will include pro-

viding management advice and assisting in evaluating the work of VMS annually, using objective measures evaluated against the baseline and targets set in the contract.

For more information, contact Jim Sorenson at FHWA, 202-366-1333 (fax: 202-366-9981; email: james.sorenson@fhwa.dot.gov).



Washington, DC, mayor Anthony Williams (top) and Secretary of Transportation Rodney Slater were among the dignitaries at the June 19 launch of the DC Streets project.



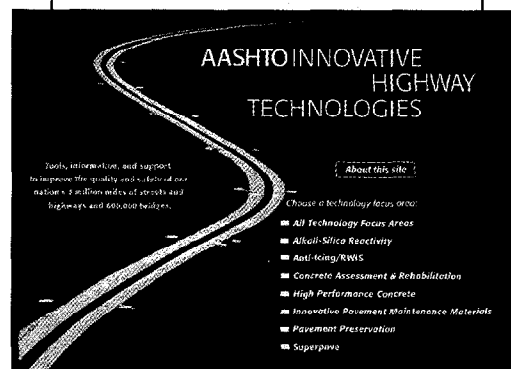
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Although the seven Lead States teams will be concluding their work this fall...

...you can still reap the benefits of their research and activities by checking out the Lead States Web site at leadstates.tamu.edu. The site covers each of the seven teams:

- Alkali-Silica Reactivity
- Anti-Icing/RWIS
- Concrete Assessment and Rehabilitation
- High-Performance Concrete
- Innovative Pavement Maintenance Materials
- Pavement Preservation
- Superpave

At the site, you can find such items as a library of resources, contacts for more information, and updates on research tests and trials. The Web page also offers the opportunity to provide feedback to team members on their work.

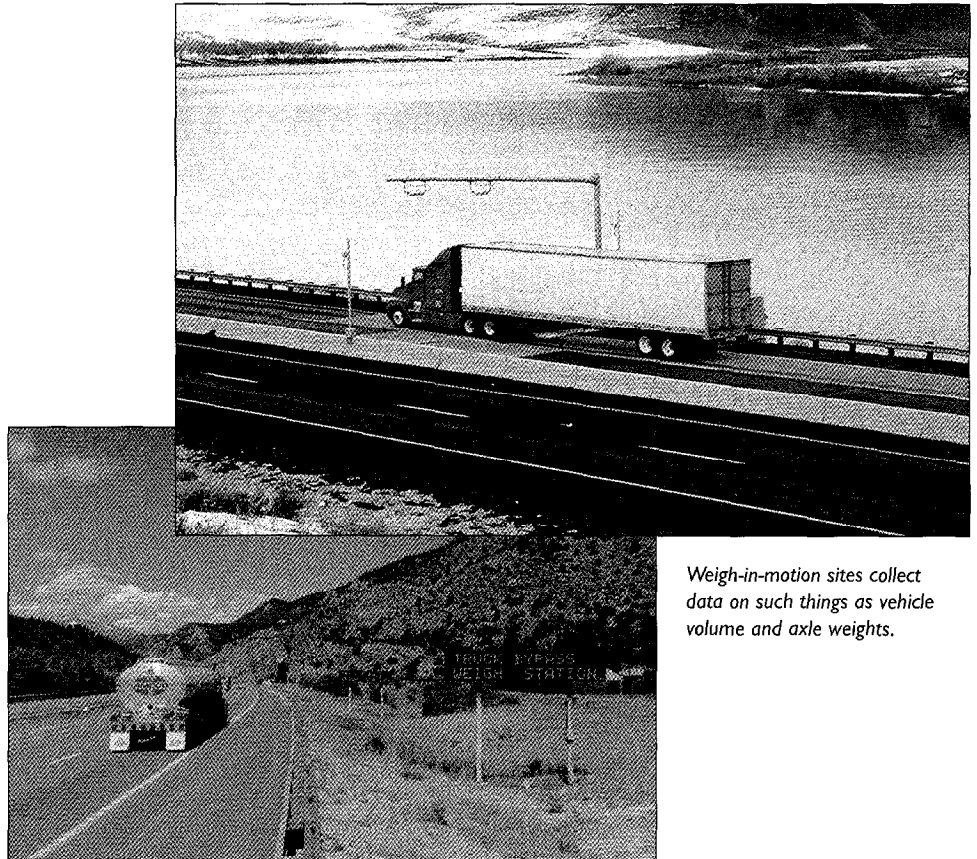


Conference To Feature Strategies for Improving Traffic Data Collection

Nearly 500 researchers, consultants, and representatives from State and Federal highway agencies will journey to Madison, Wisconsin, this summer to attend the biannual North American Travel Monitoring Exhibition and Conference (NATMEC) 2000 on August 27-31. Hosted by the Wisconsin Department of Transportation (DOT), in conjunction with the Transportation Research Board and the Federal Highway Administration (FHWA), the conference will focus on improving traffic data collection and data management.

Traffic data are one of the data elements that are needed to determine highway performance. The data are used to assess the longevity and performance of a pavement and determine which pavement construction methods are most effective.

The conference will include sessions on such topics as using global positioning system and cellular technology for traffic and travel monitoring, building intelligent transportation system data archives, and analyzing and using traffic data. The featured sessions will also include "Setting the Standards for Research Quality Data at Long-Term Pavement Performance (LTPP) Specific Pavement Studies (SPS) Sites." The SPS experiments were designed to learn how such factors as cumulative traffic loading affect pavements of different compositions, environmental conditions, and layer thicknesses. However, at some of the sites, traffic data collection has been inadequate. A Traffic Data Collection and Analysis Expert Task Group (ETG) has recommended solutions to this problem, including such ideas as implementing a State pooled-fund study and transferring the responsibility for SPS traffic data collection to an outside contractor. Larry Wiser of FHWA's LTPP program will discuss



Weigh-in-motion sites collect data on such things as vehicle volume and axle weights.

the plans being considered by the ETG and the LTPP program.

As part of this session, John Weaver of Indiana DOT will give a presentation on "Smoothness Criteria for Construction and In-Service Conditions at LTPP SPS Weigh-in-Motion Sites." The quality of data obtained from weigh-in-motion (WIM) sensors, which collect information on such things as vehicle volume and axle weights, is highly dependent upon the pavement in which they are installed. Smoother pavements provide more accurate and less variable measurements. To ensure that WIM equipment is installed in smooth pavements, and to achieve more uniform conditions among different SPS test sites, criteria have been developed to help a State evaluate the pavement

both at the time of construction and while it is in service.

In a related presentation, Barbara Ostrom, a contractor to FHWA, will discuss WIM equipment selection and installation for SPS sites. Until now, traffic data collection at SPS sites has not been conducted using identical WIM equipment at all locations. In consultation with the Traffic ETG, FHWA's LTPP team has developed specifications for WIM systems that include accuracy requirements and construction guidelines.

For more information on NATMEC, check out the conference Web site at www.cae.wisc.edu/~natmec/. For more information on the LTPP sessions, contact Larry Wiser at 202-493-3079 (fax: 202-493-3161; email: larry.wiser@fhwa.dot.gov).

Manuals of Practice: Recipes for Longer Lasting Pavement Repairs

After 5 years of monitoring and evaluating 22 test sites on asphalt and concrete roads throughout the United States and Canada, the Federal Highway Administration (FHWA) has concluded that the Strategic Highway Research Program (SHRP) researchers got it right—i.e., the pavement repair materials and procedures recommended by SHRP work.

“What we found,” says Charlie Churilla, head of FHWA’s long-term pavement performance (LTPP) program, “is that the practices recommended in the original SHRP manuals of practice are good practices. The repairs at the test sites have held up well, validating the materials, equipment, and procedures specified in the manuals.”

Back in 1993, SHRP researchers had published a two-volume set of manuals aimed at assisting highway agencies and contractors in determining the most effective and cost-efficient means for repairing asphalt and portland cement concrete pavements. The recommendations were based on an extensive review of the literature, a nationwide survey of highway agencies, and 18 months of

monitoring various types of pavement repairs made at the 22 test sites.

The monitoring ended when the SHRP research phase ended in late 1992. Realizing that significant knowledge could be gained through continued monitoring of the test sites, FHWA stepped in and assumed responsibility for the project in 1993, under the auspices of the LTPP program.

During the 5 years of monitoring under FHWA, teams of pavement specialists from ERES Consultants (who had also been involved in the SHRP project) conducted periodic field inspections.

“We learned that all of the materials and procedures recommended by SHRP worked well, which is not surprising because we recommended only those materials and procedures that had the best chance of succeeding,” says Tom Wilson of ERES.

The manuals call for high-quality materials, if you want high-quality results. “But that doesn’t mean you necessarily have to pay a lot,” says Wilson. For example, the Pennsylvania Department of Transportation’s specification for pothole patching materials (Penn-

485) costs less than half of many proprietary products, yet holds up exceedingly well.

FHWA has updated the original SHRP reports as a series of four manuals of practice:

- Materials and Procedures for Sealing and Filling Cracks in Asphalt-Surfaced Pavements (Publication No. PB2000103413)
- Materials and Procedures for Repair of Potholes in Asphalt-Surfaced Pavements (Publication No. PB2000103415)
- Materials and Procedures for Repair of Joint Seals in Portland Cement Concrete Pavements (Publication No. PB2000103412)
- Materials and Procedures for Rapid Repair of Partial-Depth Spalls in Concrete Pavements (Publication No. PB2000103414)

Each manual includes a discussion of the most appropriate time to apply a particular treatment, what types of materials and construction methods should be used, and how to evaluate the performance and cost-effectiveness of a repair procedure. Also included are step-by-step procedures for ensuring a high-quality repair and a list of sources for materials and equipment.

The four manuals of practice are available on the Web at www.tfhr.gov/pavement/ltp/reports.htm. They can also be purchased from the National Technical Information Service at 703-605-6000 (toll free: 800-553-6847; Web: www.ntis.gov). (The original SHRP two-volume manuals are still available from the Transportation Research Board’s bookstore at 202-334-3213 or www.nas.edu/trb/bookstore.)

For more information, contact FHWA’s Bill Bellinger at 202-493-3156 (email: william.bellinger@fhwa.dot.gov).



The updated SHRP manuals of practice provide step-by-step procedures for ensuring high-quality pothole patching and other repairs.

“The practices recommended in the original SHRP manuals of practice are good practices. The repairs at the test sites have held up well, validating the materials, equipment, and procedures specified in the manuals.”

In Brief...

Interested in discussing the merits of various deicing and anti-icing chemicals or the latest in snow and ice control methods and materials? Looking for information on such topics as the pros and cons of measuring pavement temperatures with truck-mounted infrared thermometers? You can find all of this and more on the **Snow and Ice List Serve** maintained by the University of Iowa. The List Serve currently has about 400 subscribers, many of whom work for State, city, and county agencies. The List Serve has also attracted a significant number of foreign subscribers, including individuals from Japan, Sweden, Finland, and Norway.

"Many of the topics discussed are cutting edge technology," says Lee Smithson of the Iowa Department of Transportation. "These are not things that you can go to the library and look up. They're so new."

To subscribe to the List Serve, send an email to snow-ice-request@list.uiowa.edu. In the body of the message, type "Subscribe." If you have questions or would like more information, send an email to owner-snow-ice@list.uiowa.edu.

The National Mayday Readiness Initiative, a partnership among the Federal Highway Administration; the ComCARE Alliance, a coalition that includes public and highway safety groups, emergency medical technicians, and automobile companies; and other public and private organizations, is a new effort to integrate automobile Mayday technologies with emergency response agencies. Mayday systems, which link vehicles to private call centers, are an increasingly popular option in new automobiles. When an airbag is deployed or an emergency call button is pushed, the call center is notified. The challenge is to more efficiently and seamlessly link these call centers with 9-1-1 and emergency medical services and transportation and law enforcement agencies, in order to improve

emergency response time and save lives.

Participants in the initiative are holding a series of meetings between now and September to discuss appropriate standards, protocols, and procedures for integrating Mayday technologies. The results of these meetings will be published in an *Integration Report* that is due out this fall. The report, which will be distributed to public safety officials, lawmakers, and business executives across the country, will serve as a roadmap for this rapidly emerging technology.

For more information on the Mayday Initiative, contact Bill Baker at FHWA, 202-366-8034. You can also check out the Mayday Web site at www.nmri.net. ▼



The Snow and Ice List Serve provides the latest in snow and ice control methods, such as the anti-icing application shown here.

Highway Technology Calendar

The following events provide opportunities to learn more about Strategic Highway Research Program (SHRP) products and technologies, as well as other technologies for building better, safer roads.

International Symposium and Innovative Technology Tradeshow 2000: Moving Innovation into Practice for a Sustainable Future

August 14–17, 2000,
Washington, DC

This symposium on the design and construction technology of the future will include a special track on transportation infrastructure and public works.

Contact: CERF, 202-842-0555 (fax: 202-789-2943; email: 2000@cerf.org; Web: www.cerf.org).

Fifth Annual Eastern Winter Road Maintenance Symposium and Equipment Expo

September 6–7, 2000, Roanoke, VA

The symposium and equipment expo will coincide with the Transportation Research Board's "Fifth International Symposium on Snow Removal and Ice Control Technology," which is scheduled for September 3–8, 2000.

Contact: Deborah Vocke at FHWA, 410-962-3744 (fax: 410-962-3655; email: deborah.vocke@fhwa.dot.gov).

Fifth Annual Lead States Workshop

September 17–19, 2000, St. Louis, MO

The final Lead States Workshop will provide an official wrap-up for members of the seven teams. The team members will also discuss

their transition plans for shifting responsibilities to the appropriate AASHTO subcommittees.

Contact: Haleem Tahir at AASHTO, 301-975-5275 (fax: 301-330-1956; email: haleem.tahir@nist.gov).

International Symposium on High-Performance Concrete

September 25–27, 2000, Orlando, FL

The symposium will address the research, design, construction, performance, and benefits of high-performance concrete. It is being held in conjunction with the 46th annual Precast/Prestressed Concrete Institute Annual Convention and Exposition.

Contact: Terry Halkyard at FHWA, 202-366-6765 (fax: 202-366-3077; email: terry.halkyard@fhwa.dot.gov).

Asphalt Rubber 2000: The Pavement Material of the 21st Century

November 14–17, 2000,
Vilamoura, Portugal

The conference will feature sessions on such topics as asphalt rubber binder design, pavement performance, and recycling.

Contact: Dick Stubstad at Consulpav, 805-649-1111 (fax: 805-649-2133; email: stubstad@aol.com; Web: www.consulpav.com/AR2000/).

Eighth Annual United States Hot-Mix Asphalt Conference

November 15–17, 2000,
Cincinnati, OH

Sponsored by the National Asphalt Pavement Association (NAPA), State asphalt pavement associations, and the Asphalt Institute, the conference is designed for paving professionals in both the public and private sectors. This year's conference will focus on innova-

tive contracting practices that provide incentives to build better pavements faster in order to increase customer satisfaction. Conference cosponsors include the Federal Highway Administration, American Association of State Highway and Transportation Officials, National Association of County Engineers, and Ohio Department of Transportation.

Contact: Carol Prouty at NAPA, 301-731-4748 (fax: 301-731-4621; email: carol@hotmix.org; Web: www.hotmix.org/2000hmaconf/index.htm).

Asphalt Technology 2000

December 10–13, 2000, Austin, TX

The conference is designed to provide a forum for transportation professionals and industry representatives to share information on practical engineering solutions to pavement problems. Topics covered will include specifications, pavement maintenance, and state-of-the-art technology.

Contact: Sharon Campos at the University of Texas at Austin, 512-471-3396 (fax: 512-471-0831; email: scampos@mail.utexas.edu).

Fourth Annual Asphalt Conference & Expo

March 11–14, 2001, Atlanta, GA

Conference topics will include work zone safety, quality control/quality assurance, choosing the right aggregate, and recycling and reclaiming. The conference will also feature outdoor repaving and reclamation demonstrations.

Contact: Wendy Cantwell at 816-246-7711 (fax: 816-254-7446). ▼

Seventh International Conference on Concrete Pavements

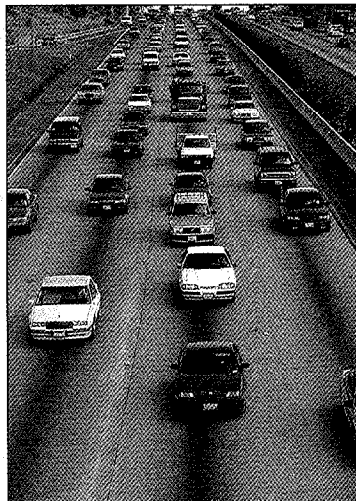
September 9–13, 2001, Orlando, Florida

Designed for pavement and geotechnical engineering professionals, the conference's focus is on using concrete to develop long-lasting pavement solutions for the 21st century. The event will highlight new technologies related to the design, construction, and rehabilitation of various types of concrete pavements. Conference topics include:

- High-performance concrete pavements
- Prestressed concrete pavements
- Whitetopping
- Concrete pavements for high-volume urban highways
- Portland cement concrete pavement rehabilitation

The conference will also include a 1-day workshop on "Formulating the Long Range Research Needs for PCC Pavements."

The conference is sponsored by the International Society for Concrete Pavements. Cosponsors in-



clude the American Concrete Pavement Association, the Transportation Research Board, Purdue University, and the Federal Highway Administration.

For more information, contact Shiraz Tayabji of Construction Technology Laboratories, Inc., at 410-997-0400 (fax: 410-997-8480; email: stayabji@ctlgroup.com).

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Focus is a vehicle for promoting SHRP products and other highway technologies that FHWA and States are using to build better, safer roads. The Strategic Highway Research Program (SHRP) was established by Congress in 1987 as a 5-year, \$150 million research program to improve the performance and durability of our Nation's highways and to make them safer for motorists and highway workers. As a follow-on to SHRP, Congress provided funding in the Intermodal Surface Transportation Efficiency Act of 1991 to implement SHRP products and to continue SHRP's long-term pavement performance (LTPP) program. While the 1998 Transportation Equity Act for the 21st Century did not specifically allocate any money for SHRP initiatives, FHWA remains committed to the continued implementation of SHRP products.

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